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K&L Gates LLP P. O. BOX 1135 CHICAGO, IL 60690			ENIN-OKUT, EDU E	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/509,843	Applicant(s) IMAZATO ET AL.	
	Examiner Edu E. Enin-Okut	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 47-92 is/are pending in the application.
- 4a) Of the above claim(s) 52,56,57,61-76,79 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 47-51,53-55,58-60,78 and 80-92 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1795

**WATER DISPOSAL SYSTEM, METHOD OF DISPOSING WATER,
AND POWER GENERATION APPARATUS**

Detailed Action

1. The amendments filed on February 11, 2009 were received. Applicant has amended claims 47, 51, 53-55, 58, 59, 78, 82, 87-89, 91 and 92; and, cancelled claims 52 and 79. Currently, claims 47-51, 53-55, 58-60, 78 and 80-92 are pending.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Drawings

3. The objections to the drawings are withdrawn in light of amendments made to the claims that removed references to "heat sink portion" and a "predetermined shape".

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 55 and 82 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 55, the claim recites the limitation "the current collector". There is insufficient antecedent basis for this limitation in the claim. (Its parent claim, claim 47, makes no reference to "a current collector".)

Regarding claim 82, the claim recites "... the separator has a radiating fin formed thereon ..." and "the water-absorbing member includes a region extended from the surface having the radiating fin formed

Art Unit: 1795

therein ...". However, the instant specification describes the radiating fin as being an *integral* part of a water-absorbing cloth 120 on p. 89, line 27 to p. 90, line 7. Thus, recitation presented above is unclear.

Claim Rejections - 35 USC § 102

6. The rejection of claims 47-51, 58, 59, 78-81, 83-84, 88, 89, 91 and 92 under 35 U.S.C. 102(b) as being anticipated by Sakakibara et al. (JP 02-168565) is withdrawn because claims 47, 51, 58, 59, 78, 82, 88, 89, 91 and 92 were amended and claim 79 was cancelled.

Claim Rejections - 35 USC § 103

7. Claims 47-51, 53, 58, 59, 78-81, 83, 84, 88, 89, 91 and 92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakakibara et al. (JP 02-168565; refer to translation) in view of Streckert et al. (US 6,447,945).

Regarding claim 47, Sakakibara teaches a water disposal system [water absorbing member 13, water trapping member 15, drain 31] for disposing water generated during power generation by a power generator [fuel cell] (Figs. 2(A), 2(B); p. 4, para. 3 – p. 5, para. 1; p. 11, para. 5-6), Comprising:

- a water-absorbing member [13] extending from the power generator, for recovering and moving the water by utilizing capillary phenomenon (p. 6, para. 2); and,
- a water-retaining member [15] for temporarily accumulating the water (p. 5, para. 4).

However, Sakakibara does not expressly teach that the water-absorbing layer is provided on a surface of an electronic device to which the power generator is mounted, as being extended from the surface.

Sakakibara does not expressly teach that the water-absorbing layer is provided on a surface of an electronic device to which the power generator is mounted, as being extended therefrom.

Strecker teaches a portable electronic device powered by fuel cells which include arrangements for effectively and efficiently removing water generated at such fuel cells from the interior of a case, such as a case which holds the commonly used laptop personal computers (Abstract; 1:40-44). The water transportation system 41, located in the lid of a laptop case as shown in Figs. 3, 8 and 9, employs a wick arrangement with a wick 43 (a braided or otherwise accumulated group of strands of polypropylene fiber or some other hydrophilic polymeric fiber) located adjacent the air outlet passages from the fuel cell unit 33, along a perimeter boundary of that section of the PC case containing the fuel cell unit (e.g. along one or both side edges of the lid) (Figs. 3, 8; 4:22-40). The wick 43 is disposed in a porous tube 45 that is positioned inside a generally coaxial porous outer tubular holder 47; thus, the wick is always exposed to the ambient environment, thus promoting evaporation at its surface (Figs. 4, 5; 4:41-54).

It would have been obvious to one of ordinary skill in the art at the time of the invention to dispose a water-absorbing layer of Sakakibara on a surface of an electronic device, and extending therefrom, because Strecker teaches that the layer, positioned as described above, can remove water generated by fuel cell operation from the interior of the device.

Regarding claim 48, Sakakibara teaches the power generator is a fuel cell (Fig. 2(A); p. 5, para. 3; p. 9, para. 5) comprising:

- an anode [fuel electrode 1];
- a cathode [air electrode 2]; and,
- an electrolyte film [3] disposed between the anode and cathode.

As to the anode being supplied with a substance substantially composed of hydrogen as an active anode material; or, the cathode being exposed to air and supplied with oxygen as an active cathode material, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations (e.g., *Ex parte Masham*, 2 USPQ 1647 (1987)). See MPEP 2111.02 (II).

Art Unit: 1795

However, the anode and cathode of Sakakibara is structurally similar to that instantly disclosed, they appear capable of generating energy when supplied with a fuel such as hydrogen and an oxidant such as air.

Regarding claim 49, Sakakibara teaches a cathode has a current collector [separator 10] formed thereon, an opening [flow hole 21] through which oxygen is supplied to the cathode [2], and a water-absorbing member [13, 15] formed on a circumference of the opening (Figs. 1(B), 2(B); p. 7, para. 4; p. 10, para. 1, 3). One of ordinary skill would appreciate that a cross-sectional view taken along a fuel feeding groove 12 of the fuel cell of Sakakibara as shown in Fig. 2(B) would show a portion of the air electrode 2 formed on the separator 10.

Regarding claim 50, Sakakibara teaches that the water-absorbing member [13, 15] is formed to surround the circumference of the opening so as to cover the opening and to reach the cathode (Figs. 2(B), 4; p. 10, para. 3).

Regarding claim 51, Sakakibara teaches that the water-absorbing member [13] is composed any one of a string-formed material having a void portion formed therein in a longitudinal direction thereof and a porous material having recessed portions on the surface thereof (p. 8, para. 2).

One of ordinary skill would appreciate that a porous material will have a voids with a width of some measure in a longitudinal direction, and it will also have recessed portions on its surface, even though the degree to which that portion is recessed may be slight.

Regarding claim 53, Sakakibara and Streckert do not expressly teach that the water-absorbing member has a portion selected from a group consisting of an irregular-shaped portion and a projected portion. However, it would have been an obvious matter of design choice to include an irregular-shaped portion and a projected portion, since such a modification would have involved a mere change in the shape of a component. A change in shape is generally recognized as being within the level of ordinary skill in the art (e.g., *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966)). See MPEP 2144.04 (IV).

Art Unit: 1795

Regarding claims 58 and 59, the limitations recited in these claims have been addressed above with respect to claims 47 and 48.

Regarding claim 78, if the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, then the preamble is not considered a limitation and is of no significance to claim construction (e.g., *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir. 1999); *Rowe v. Dror*, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997)). See MPEP 2111.02 (II).

Sakakibara also teaches a power generation apparatus for generating electric power [fuel cell] by supplying a fuel gas and an oxidizer gas such that the fuel gas and the oxidizer gas can electrochemically react with each other (claim 1), comprising:

- a power generator [fuel cell] having a predetermined electrolyte film [3] provided between a first electrode [1] and a second electrode [2] (Figs. 2(A), 2(B); p. 9, para. 5);
- a separator [10] having, formed thereon, a fuel supply groove [11] for supplying the fuel gas to the first electrode and an oxidizer supply groove [12] for supplying the oxidizer gas to the second electrode, and for holding the power generator (p. 9, para. 5); and,
- a water-absorbing member [13] for absorbing water generated during power generation by the power generator, provided at least on a midway portion of the oxidizer supply groove (Fig. 2(B); p. 6, para. 2; p. 7, para. 5 – p. 8, para. 1).

As to the water-absorbing member being provided of a surface of an electronic device, this limitation has been addressed above with respect to claim 47.

Regarding claim 80, Sakakibara teaches that the water-absorbing member [13] is provided along at least a partial region of a sidewall [B] of the oxidizer supply groove [11] (Fig. 1(B); p. 7, para. 5 – p. 8, para. 1).

Art Unit: 1795

Regarding claim 81, Sakakibara teaches that the water-absorbing member [13] is provided so as to cover at least a part of the surface having the oxidizer supply groove formed therein (Figs. 1(B), 2(A), 2(B); p. 7, para. 5 – p. 8, para. 1).

Regarding claims 83 and 84, the limitation recited in this claim has been addressed above with respect to claim 47 and 51, respectively.

Regarding claim 88, Sakakibara teaches that the water-absorbing member includes the oxidizer supply groove having a high water-repellent region formed therein (p. 4, para. 2).

Regarding claim 89, Sakakibara teaches that the water-absorbing member includes the oxidizer supply groove having a high hydrophilic region formed therein (p. 6, para. 2).

Regarding claim 91, Sakakibara teaches that a power generation section having a stacked structure in which a plurality of elements holding the power generator by the separator is stacked (Figs. 2(A), 2(B); p. 9, para. 5).

Regarding claim 92, the limitations recited in this claim have been addressed above with respect to claim 49.

8. Claim 54, 85 and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakakibara and Streckert as applied to claims 47-51, 53, 58, 59, 78, 80, 81, 83, 84, 88, 89, 91 and 92 above, and further in view of Chizawa et al. (US 6,613,467).

Sakakibara and Streckert are applied and incorporated herein for the reasons above.

Regarding claim 54, Sakakibara and Streckert do not expressly teach that the water-retaining member is provided between the water-absorbing member and the electronic device.

Chizawa teaches a fuel cell system that using a temperature/humidity exchange portion 10, with a water retentive porous body 14, is disposed to contact a fuel cell stack 9, as shown in Figs. 2A, 2B (8:29-31, 8:49-55, 9:8-15).

Art Unit: 1795

It would have been obvious to one of ordinary skill in the art at the time of the invention to place a water-retentive member between a water-absorbing member and an electronic device of Sakakibara, as modified by Streckert, in the manner taught by Chizawa to move moisture out of the electronic device and maintain the humidity required for efficient operation of a fuel cell (see Chizawa, Abstract, 9:8-15).

Regarding claim 85 and 86, Sakakibara teaches the water absorbing member includes a material that absorbs water by using capillary phenomenon, as discussed above.

However, Sakakibara and Streckert do not expressly teach that the water-absorbing member comprises a three-layered structure in which a two-layered structure including a first material having a water-absorbing/releasing property and a second material having a water absorbency bonded with each other is further bonded with a predetermined tape material on the lower side of the second material.

Chizawa, discussed above, teaches that its porous water retentive porous body 14, which is required to be able to hold water and allow this water to evaporate upon a change of osmotic pressure, can be formed of a composite film composed of a fluorinated porous film laminated with a fibrous polymer material (9:5-15). The porous body is attached to a grooved, carbon separator plate through a sealing material 8 (8:56-65; Figs. 2A, 3A).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a layered structure as the water absorbing member of Sakakibara, as taught by Chizawa, to further control the structure of the water absorbing member in efforts to ensure that absorbed water from fuel cell operations is effectively moved out of the cell.

9. Claims 55, 60 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakakibara and Streckert as applied to claims 47-51, 53, 54, 58, 59, 78, 80, 81, 83, 84, 88, 89, 91 and 92 above, and further in view of Imahashi et al. (US 5,350,643).

Sakakibara and Streckert are applied and incorporated herein for the reasons above.

Art Unit: 1795

Regarding claims 55 and 60, Sakakibara teaches a water-absorbing layer having at least water absorbency, air permeability and electro-conductivity and a current collector (p. 7, para. 4; p. 8, para. 2-3). One of ordinary skill would appreciate that the carbon black which can be included in the water-absorbing layer of Sakakibara is electro-conductive.

Sakakibara and Streckert do not expressly teach that the water-absorbing layer is provided between a diffusion layer and the current collector.

Imahashi teaches a fuel cell with gas diffusion electrodes 2 and 3, composed of catalyst layers 6 and 8 and diffusion layers 7 and 9 provided on the outer side of the respective catalyst layers, being fed hydrogen-containing gas and oxygen-containing gas to respective electrodes (Abstract; Fig. 1). One of ordinary skill in the art at the time of the invention would have found it obvious to include a gas diffusion layer on the cathode of Sakakibara, as taught by Imahashi, because the diffusion layer can serve to increase electron conduction through the cell (see Imahashi, 3:1-2).

Regarding claim 90, Sakakibara teaches that its fuel cell includes an air electrode, as discussed above. Sakakibara does not expressly teach that the fuel gas includes a hydrogen gas.

However, Imahashi also teaches that its fuel cell electrodes use hydrogen and oxygen to facilitate an electrochemical reaction that produces a current (1:11-55). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to use hydrogen as fuel for the power generation apparatus of Sakakibara because it is known in the art as molecule which easily ionizes into protons to releases electrons.

10. Claim 87 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakakibara and Streckert as applied to claims 78, 80, 81, 83-86 above, and further in view of Nishida et al. (US 6,660,419).

Sakakibara and Streckert are applied and incorporated herein for the reasons below.

Art Unit: 1795

Regarding claim 87, Sakakibara and Streckert do not expressly teach that the oxidizer supply groove has a roughened surface.

Nishida teaches the performance of a fuel cell can be improved by roughening the surface of separator grooves for gas flow because contact resistance is reduced (14:24-41).

It would have been obvious to one of ordinary skill in the art at the time of the invention to roughen the surface of the oxidizer supply groove in the power generating apparatus of Sakakibara, as modified by Streckert, because Nishida teaches this roughening can improve the performance of the apparatus.

Response to Arguments

11. Applicant's arguments filed February 11, 2009 have been fully considered but they are not persuasive.

12. As to applicant's contention that the Sakakibara and Streckert reference fail to disclose or suggest "... a water-absorbing member provided on a surface of an electronic device, as being extended from the surface." as recited in amended claims 47, 58 and 78, it should be noted that, during patent examination, the pending claims must be given the broadest reasonable interpretation consistent with the specification. *In re Morris*, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Prater*, 415 F.2d 1393, 162 USPQ 541 (CCPA 1969). See also MPEP 2111 - 2111.01. Limitations from the specification are not read into the claims. *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). One would readily appreciate that the broadest reasonable interpretation of "a surface" as recited above includes all surfaces of a device, both internal and external. Further, because the water-absorbing member has a given thickness (or height), it "extends" away from the surface of the device when placed upon that surface.

Art Unit: 1795

13. As to the remainder of applicant's arguments, they have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence / Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Edu E. Enin-Okut** whose telephone number is **571-270-3075**. The examiner can normally be reached on Monday-Thursday, 7 a.m. - 3 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dai-Weh Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available

Art Unit: 1795

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/Edu E Enin-Okut/
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795